Table 2. Factor loads of the relationships identified between the concentration of IgA anti-CD74 and the activity indices of axial spondyloarthritis

Indicator	Factor loading (R)		
Factor	Factor 1	Factor 2	Factor 3
IgA anti-CD74	-	-	0.667
BASDAI	-	0.844	0.842
ASDAS	0.530	0.959	0.857
BASFI	-	0.614	0.820
CRP	0.760	-	-

«-» no significant association present.

Figure 1. Concentration of IgA anti-CD74 for healthy volunteers (left) and patients with axial spondylitis (right)

As compared to controls sensitivity of IgA to anti-CD74 was 64.7%, specificity of this method was 68.1%.

Conclusion: The concentration of IgA to anti-CD74 is increased in 70.1% of pts with axSpA and associated with an increase in disease activity detected with ASDAS and BASDAI, independently from CRP. More data are needed in detection of sensitivity and specificity of IgA to CD74 in axSpA.

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Disclosure of Interests: Elizaveta Vasilenko: None declared, V Mazurov: None declared, Sergey Lapin: None declared, Irina Kholopova: None declared, Anna Dadalova: None declared, Inna Gaydukova Grant/research support from: JSC BIOCAD, Speakers bureau: Pfizer, Novartis, AbbVie, JSC BIOCAD, Celgene, MSD, Sanofi

DOI: 10.1136/annrheumdis-2020-eular.4364

FRI0598

DMARD-FREE REMISSION IN RHEUMATOID ARTHRITIS: AN ACHIEVABLE AND SUSTAINABLE OUTCOME? A SYSTEMATIC LITERATURE REVIEWM. Verstappen¹, E. Van Mulligen², P. De Jong², A. Van der Helm - van Mil^{1,2}.¹Leiden University Medical Center, Rheumatology, Leiden, Netherlands;²Erasmus University Medical Center, Rheumatology, Rotterdam, Netherlands

Background: Current treatment guidelines for rheumatoid arthritis (RA) suggest tapering DMARDs.¹ Discontinuation of DMARD-treatment is of increasing interest, and DMARD-free remission (DFR) is regarded an important future outcome.^{2,3} However, lack of knowledge on DFR prevalence, its sustainability, and the characteristics of patients achieving DFR currently hampers the use of DFR as primary outcome.

Objectives: To increase the understanding of DFR in RA, and to support studies aiming to include this as primary outcome, we systematically reviewed the literature to determine prevalence and sustainability of DFR. Potential predictors of DFR were evaluated to increase insight in patient characteristics favourable for achieving this outcome.

Methods: A systematic literature search was performed in March 2019 in multiple databases. All clinical trials and observational studies reporting on discontinuation of DMARDs in RA-patients in remission were included. Our quality assessment included a general assessment and assessment of the description of DFR. Prevalence of DFR and its sustainability, flares during tapering and after DMARD-stop were summarized. Also, potential predictors of achieving DFR were reviewed.

Results: From 631 articles, 51 were included, comprising 14 clinical trials and 5 observational studies. DFR-definition differed, especially for the duration of DMARD-free state. Considering only high and moderate-quality studies, DFR was achieved in 5.0%-24.3%, and sustained DFR (duration>12 months) in 11.6%-19.4%. Flares occurred frequently during DMARD-tapering (41.8%-75.0%) and in the first year after achieving DFR (10.4%-11.8%), whilst late flares, >1 year after DMARD-stop, were infrequent (0.3%-3.5%). Many patient characteristics lacked association with DFR. Absence of auto-antibodies and shared epitope alleles increased the risk of achieving DFR.

Conclusion: DFR is achievable in RA, and is sustainable in ~10%-20% of patients. ¹DFR can become an important outcome measure for clinical trials, and requires consistency in the definition. Considering the high rate of flares in the first year after DMARD-stop, a DMARD-free follow-up of >12 months is advisable to evaluate sustainability.

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Figure 1. Summary of flare rates and DFR-prevalence depicted on a timeline, prevalence are grouped based on the reported duration of DFR. DFR percentages of all high and moderate-quality studies with confidence intervals, indicated parenthetical. Prevalence and confidence intervals were calculated using number of DFR patients divided by the number of patients eligible for tapering. Flares were calculated using number of flares, divided by the number of patients eligible for tapering. Patients were considered eligible for tapering when they had achieved remission and subsequently were allowed to start tapering. Results from observational studies are indicated in italic; others are clinical trials. * indicates that studies that allowed the use of i.a. or systemic corticosteroids in patients that were considered to be in DFR (absolute number of patients that used corticosteroids after DMARD-stop was not reported). * indicates moderate-quality studies. DMARD: Disease-modifying antirheumatic drugs; DFR: DMARD-free remission; SDFR: sustained DMARD-free remission.

Acknowledgments: We would like to thank J. Schoones, librarian of Leiden University Medical Center, for constructing and carrying out the literature search.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.1726

FRI0599

USEFUL II: DERIVATION OF THE LUPUS ARTHRITIS AND MUSCULOSKELETAL DISEASE ACTIVITY SCORE (LAMDA) USING DATA FROM A MULTICENTRE LONGITUDINAL STUDY

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Background: Musculoskeletal (MSK) disease is the commonest manifestation of SLE. We showed that the MSK components of the BILAG index and SLEDAI have limited sensitivity, specificity and responsiveness compared to ultrasound

(US) synovitis. The USEFUL study evaluated response to glucocorticoids in SLE patients with inflammatory pain.

Objectives: To develop a disease activity tool for lupus MSK manifestations that is continuous, responsive, sensitive, and correlates with US-synovitis

Methods: 133 patients who received depomedrone 120mg IM were assessed at 0, 2 and 6 weeks for 66/68 swollen and tender joint counts, BILAG2004 index, SLEDAI-2K, physician global and MSK-VAS, inflammatory markers, patient pain and disease activity-VAS. Total US score (OMERACT-EULAR) in the hands and wrists was calculated blinded to patient and clinical assessor. Patients reported overall response using a Likert scale.

The LAMDA was developed by modelling a core set of clinical variables against total US score using penalized (Lasso) regression. Responsiveness was compared between LAMDA and other variables at week 6 using effect sizes. Minimum clinically important difference (MCID) was explored using the SEM and minimal disease activity threshold using ROC.

Results: The variables selected for the LAMDA score were swollen joint count, patient MSK pain VAS, physician MSK disease activity VAS and ESR. A continuous score was derived. This had a theoretical range from 0 to 26.5 based on maximum ESR of 100. The highest value observed in USEFUL was 15. LAMDA was significantly higher in patients with active US (mean (SD) 5.71 (2.67), $n=78$) compared to patients with normal US (3.27 (1.77), $n=55$; difference (95% CI) -2.45 (-3.26, -1.63), $t=-5.93$, $p<0.001$). This difference remained significant in patients with no swollen joints (difference (95% CI) -0.71 (-1.40, -0.02), $t=-2.06$, $p=0.044$). Effect size was greater for the LAMDA (0.37) than the BILAG-MSK (0.31), SLEDAI-MSK (0.27) and total US score (0.33). In patients with active US at baseline, LAMDA's effect size was 0.42.

The MCID was 0.71 and correlated with patient-reported change in pain. A threshold for minimal disease activity of 3.23 optimized sensitivity (0.77 (0.65, 0.89)) and specificity (0.80 (0.68, 0.92)) against US score >0 .

Conclusion: The LAMDA score is a novel continuous disease activity instrument for MSK manifestations of SLE derived from variables familiar to rheumatologists. The LAMDA score is sensitive to imaging detected synovitis without swelling and more responsive than other instruments. LAMDA may improve the ability of clinicians to accurately determine therapeutic efficacy in clinical trials and practice. Future work will validate the LAMDA score in independent cohorts and randomized trials.

Acknowledgements: This project was funded by Lupus UK

Disclosure of Interests: Khaled Mahmoud: None declared, Ahmed Zayat: None declared, Md Yuzaiful Md Yusof: None declared, Coziana Ciurtin Grant/research support from: Pfizer, Consultant of: Roche, Modern Biosciences, Chee-Seng Yee: None declared, David Isenberg Consultant of: Study Investigator and Consultant to Genentech, Lee-Suan Teh: None declared, Katherine Dutton: None declared, David d'cruz Grant/research support from: GlaxoSmithKline, Nora Ng: None declared, Philip G Conaghan Consultant of: AbbVie, BMS, Eli Lilly, EMD Serono, Flexion Therapeutics, Galapagos, GSK, Novartis, Pfizer, Speakers bureau: AbbVie, Eli Lilly, Novartis, Pfizer, Paul Emery Grant/research support from: AbbVie, Bristol-Myers Squibb, Merck Sharp & Dohme, Pfizer, Roche (all paid to employer), Consultant of: AbbVie (consultant, clinical trials, advisor), Bristol-Myers Squibb (consultant, clinical trials, advisor), Lilly (clinical trials, advisor), Merck Sharp & Dohme (consultant, clinical trials, advisor), Novartis (consultant, clinical trials, advisor), Pfizer (consultant, clinical trials, advisor), Roche (consultant, clinical trials, advisor), Samsung (clinical trials, advisor), Sandoz (clinical trials, advisor), UCB (consultant, clinical trials, advisor), Christopher Edwards Grant/research support from: AbbVie, Biogen, Roche, Consultant of: AbbVie, Samsung, Speakers bureau: AbbVie, BMS, Biogen, Celgene, Fresenius, Gilead, Janssen, Lilly, Mundipharma, Pfizer, MSD, Novartis, Roche, Samsung, Sanofi, UCB, Elizabeth Hensor: None declared, Edward Vital Grant/research support from: AstraZeneca, Roche/Genentech, and Sandoz, Consultant of: AstraZeneca, GSK, Roche/Genentech, and Sandoz, Speakers bureau: Becton Dickinson and GSK
DOI: 10.1136/annrheumdis-2020-eular.2810

FRI0600

DIAGNOSTIC VALUE OF SERUM CONNECTIVE TISSUE GROWTH FACTOR IN RHEUMATOID ARTHRITIS

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Background: Many autoantibodies are found in the serum of rheumatoid arthritis (RA) patients, including RF, ACPA and so on, which are essential for the disease diagnosis and prognosis judgment. However, 20-30% of patients are still seronegative, so more investigations are needed to find new biomarkers in RA.

Objectives: To investigate the prevalence of serum connective tissue growth factor (CTGF) and the association with the clinical features in RA patients.

Methods: Serum samples were obtained from 180 patients with RA, 168 patients with other rheumatic diseases, including 43 systemic lupus erythematosus (SLE), 34 osteoarthritis (OA), 17 primary Sjögren's syndrome (pSS), 20 ankylosing spondylitis (AS), 23 psoriatic arthritis (PsA), 6 reactive arthritis (ReA), 20

systemic sclerosis (SSc), and 5 systemic vasculitis (SV), and 64 healthy individuals in Peking University Third Hospital. The clinical and laboratory data of patients with RA were collected. Levels of CTGF in serum were measured by ELISA. The cut-off value of CTGF was determined by 95 percent of the concentration of the healthy controls. Statistical analyses were performed using the SPSS 24.0 software. Associations between CTGF and the clinical features of RA were evaluated.

Results: The prevalence of serum CTGF among RA patients (33.89%) was significantly higher than those of SLE (9.3%), OA (0%), AS (0%), pSS (0%), PsA (0%), ReA (0%), SSc(5%), SV(0%) and healthy controls (4.69%) ($p<0.0001$). The mean titer of serum CTGF in RA was also significantly higher than those in other rheumatic diseases and healthy controls ($p<0.001$). At the cutoff value of 264.30 pg/ml, the sensitivity, specificity, positive predictive value and negative predictive value of serum CTGF for RA were 33.89%, 96.55%, 88.41% and 55.45% respectively. Anti-cyclic citrullinated peptide (CCP) antibody ($p<0.001$), rheumatoid factor ($p<0.001$), IgG ($p=0.025$) and IgM ($p=0.004$) in CTGF-positive patients were higher than those in CTGF-negative patients. Besides, more patients with interstitial lung disease (ILD) were found in CTGF-positive RA.

Conclusion: Serum CTGF, as a novel biomarker, has certain diagnostic value for RA. Further studies are necessary to get more knowledge for the diagnostic performance of CTGF in RA.

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Fig 1. Distribution of serum CTGF in RA, other rheumatic diseases and healthy control. Serum sample were from 180 patients with rheumatoid arthritis (RA), 168 patients with other rheumatic diseases and 64 healthy individuals (HC). Levels of serum CTGF were measured by CTGF ELISA kit. The cut-off value was 263.30 pg/mL (black horizontal dotted line); *** $p<0.001$

Table 1. Demographic, clinical and laboratory features of total RA patients and grouped with serum CTGF.

	Total (n=180)	Positive (n=61, 33.89%)	Negative (n=119, 66.11%)	P value
Age, mean±SD, years	59.90±13.457	62.67±10.730	58.48±14.497	$p=0.030$
Woman, n (%)	134/180 (74.4)	43/61 (70.5)	91/119 (76.5)	$p=0.384$
Disease duration, month (range)	54 (10.3-154.5)	72 (12.0-168.0)	36 (9.0-140.0)	$p=0.206$
<12month	55/180 (30.6)	16/61 (26.2)	39/119 (32.8)	$p=0.367$
Smoking, n (%)	28/180 (15.6)	14/61 (23.0)	14/119 (11.8)	$p=0.061$
Morning stiffness, min (range)	30 (0.0-90.0)	35 (10.0-90.0)	30 (0.0-90.0)	$p=0.279$
SJC28, n (range)	4 (1.0-12.0)	4 (1.0-13.8)	5 (1.0-11.0)	$p=0.842$
TJC28, n (range)	8 (2.0-16.0)	8 (2-15.8)	8 (2.0-18.0)	$p=0.829$
ESR, mm/h (range)	33 (14.0-66.0)	36 (16.0-66.0)	32(11.5-66.0)	$p=0.478$
CRP, mg/dl (range)	2.88 (0.795-8.065)	2.52 (0.780-7.420)	3.12 (0.795-8.200)	$p=0.565$
DAS28-ESR	6.83±1.969	6.91±1.885	6.79±2.018	$p=0.704$
DAS28-CRP	4.33±2.450	4.21±2.252	4.39±2.557	$p=0.656$
Positivity of anti-CCP antibody, n (%)	99/159 (62.3)	48/57 (84.2)	51/102 (50.0)	$p=0.001$
Positivity of RF, n (%)	90/170 (52.9)	46/59 (78.0)	44/111 (39.6)	$p=0.001$
IgG, IU/ml (range)	14.50 (1.100-17.425)	15.15 (1.700-19.950)	14.15 (1.075-17.000)	$p=0.025$
IgM, IU/ml (range)	1.04 (0.718-1.400)	1.17 (0.890-1.720)	1.01 (0.700-1.180)	$p=0.004$
IgA, IU/ml (range)	2.78 (1.920-3.940)	3.12 (2.085-4.118)	2.77 (1.820-3.865)	$p=0.078$
Interleukin changes				
Erosion	38/143 (26.6)	15/54 (27.8)	23/89 (25.8)	$p=0.800$
Joint-space narrowing	97/144 (67.4)	38/54 (70.4)	31/90 (34.4)	$p=0.551$
ILD, n(%)	49/180(27.2)	25/61(41.0)	24/119(20.2)	$p=0.003$

Abbreviations: RA=rheumatoid arthritis; SJC=swollen joint count; TJC=tender joint count; ESR=erythrocyte sedimentation rate; CRP=C-reactive protein; DAS=disease activity score; CCP=cyclic citrullinated peptide; RF=rheumatoid factor. CTGF=connective tissue growth factor; ILD= interstitial lung disease